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NAVAL POSTGRADUATE SCHOOL
Monterey, California



PROVIDING FOR TIMELY CURRICULAR CHANGES

by

W. F. Koehler

2 November 1970

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Monterey, California

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ABSTRACT

A free curricular enterprise within bounds which provides for timely curricular changes is described as a mode of operation between the two extremes of the curricular spectrum; namely, the completely free curricular operation and the absolute monopolistic curricular operation. The demand for courses is generated by the preparation of curricular programs under the cognizance of curricular chairmen. Students invest in courses supplied by discipline-oriented departments under the cognizance of the traditional departmental chairmen. The quasi competition within bounds provides a range of free curricular enterprise beyond the minimum Master degree requirements in School β for an interlocking curricula superstructure containing pertinent concepts in disciplines of other schools sufficiently meaningful to attract and educate those needed to define and solve the urgent problems of contemporary society. In this manner an institution can respond to its fair share of societal needs via its Master degree programs without jeopardizing its intellectual freedoms. More effective teaching by way of two inherent non-threatening procedures is but one of seventeen additional benefits described.

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INTRODUCTION

As one reviews the various studies¹ of the contemporary student's wants, expectations, and illusions, the need for more effective teaching, more effective counseling, and more relevant curricular programs is real and unambiguous. Accordingly, time is of essence to accelerate pertinent academic changes. However, this sequence of thoughts leads to the pessimism associated with the curricular inertia which has been described so frequently. Conversely, this essay describes a relatively new curricular operation which provides for optimism and may be worthy of wider consideration.

This essay is a description of a model distribution of faculty responsibilities which provides for timely curricular changes. The model is developed for and demonstrated by master-level curricular programs for the following reasons: (1) it may be implemented with relative ease and without disturbing the distribution of faculty responsibilities associated with the existing baccalaureate and doctoral programs, (2) most of the accumulated experience has been associated with master-level programs, and (3) the forecasts² of near-future societal needs and available resources seem to imply that the largest

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¹For example, see the vignettes of the institutions included in the Campus Governance Program sponsored by the American Association of Higher Education (Washington: December 1968).

²For example, see Joseph L. McCarthy, "Graduate Study in Practitioner-Oriented Fields," Proceedings of the Second Summer Workshop for Graduate Deans (Washington: The Council of Graduate Schools, 1969) pp. 115-121.

increase in graduate education during the next decade will occur in programs leading to an academically respectable master's degree followed immediately by professional employment, notwithstanding the aspirations of students and institutions.

The conceptualization of the model occurred during eight years of operational experience with a distribution which approximates the model. It is considered an ideal model because an identical distribution probably does not exist throughout any single institution, and it provides for additional benefits which correspond to many of the curricular shortcomings deplored by many but remedied by few. This is not to be interpreted as a model which will cure all academic ills. Instead, this model and its operation are described in a skeletal manner to accommodate those who are searching for ideas which they can fragment, synthesize, and/or adapt to provide more effective teaching, more effective counseling, and more relevant curricular programs in their own institutions.

To demonstrate the operations which can be expected from implementing this model, some samples of actual operations are described briefly. These sample operations have evolved in segments of several institutions which have implemented distributions of faculty responsibilities not radically different from this model. The samples were chosen to demonstrate the timeliness of major curricular changes, and some of the additional benefits. The essay concludes with a few comments concerning implementation. Such implementation includes a rarity; namely, a situation in which all concerned derive benefits from the associated changes.

A MODEL DISTRIBUTION OF FACULTY RESPONSIBILITIES
WHICH PROVIDES FOR TIMELY CURRICULAR CHANGES

The development of a reasonable model which provides for timely curricular changes may be based upon the following assumptions: (1) academic institutions are marketplaces for commodities known as academic courses; and (2) the curricular enterprise associated with these commodities is free within bounds. Assumption (2) implies that those who choose courses have freedom to choose within bounds, while those who offer courses have freedom to operate competitively to supply the courses with minimum regulation by higher authority. The development of the model consists of the following steps: (1) identifying the consumers, suppliers, bounds, and controls; and (2) distributing faculty responsibilities to be compatible with the assumptions and to provide for timely curricular changes. The results of such a development for master-level programs are recorded in Table I and demonstrated by Figs. 1, 2, and 3.

The matrix format of Fig. 1 demonstrates a master-level curriculum as a program designed for student investment in a variety of academic commodities which are supplied by the discipline-oriented departments. Note that the positions of curricular chairmen are new and that the faculty members assigned to these new positions are different from those assigned to the positions of departmental chairmen. The relations among the positions of curricular chairmen, departmental chairmen, and other academic personnel, which evolve from the distribution of responsibilities recorded in Table I, are implied by the organization chart shown in Fig. 2. Figure 3 shows Δ , the difference between the individual student's curricular program and the departmental degree

TABLE I

A MODEL DISTRIBUTION OF FACULTY RESPONSIBILITIES WHICH
PROVIDES FOR TIMELY MASTER-LEVEL CURRICULAR CHANGES

Item	Responsibilities	Reference
1	Academic institutions are marketplaces for academic commodities called courses which are measured in credit-hours.	Fig. 1
2	These commodities are supplied by the faculty in the discipline-oriented organizational substructures such as departments, divisions, groups, etc.	Fig. 1
3	The demand for these commodities to compose master-level programs is generated by the faculty members and students in the curriculum-oriented organizational substructures such as curriculum program centers, curricular offices, etc.	Fig. 1
4	The responsibilities of the discipline-oriented departments include discovering new knowledge, transmitting knowledge, designing the modules which compose their departmental degree requirements, etc.	Fig. 2
5	The responsibilities of the curricular program centers include designing (within bounds) academically sound master-level curricula to satisfy societal needs, adjusting such curricula to changing societal needs, altering such curricula to satisfy individual student needs, designing pertinent extracurricular programs, counseling the student to help him make the utmost of that one life he has to live, etc.	Fig. 2
6	The responsibilities of an institution-wide faculty council, such as a graduate school council, include establishing institution-wide curricular credit-hour requirements, residency requirements, etc.	
7	The responsibilities of a school-wide faculty council, such as an academic council, include review and approval of the modules which compose the departmental degree requirements, determination of the equivalent of departmental degree requirements for worthy multidisciplinary programs which satisfy institution-wide curricular requirements but do not satisfy any of the existing departmental degree requirements, arbitrating those individual cases on which the concerned curricular chairman and departmental chairman cannot agree, acting on all borderline cases, etc.	Fig. 2 (3)
8	On a credit-hour scale, the institution-wide curricular requirements and the departmental degree requirements are two of the bounds of free choice of courses by the student or his curricular chairman. The range of free curricular enterprise, Δ , is the difference between the individual student's program and the departmental degree requirements.	Fig. 3
9	The number and variety of courses available for inclusion in Δ and the number and variety of extracurricular programs implemented are bounded by the finite resources which are allocated by the school's manager, such as a dean, an assistant provost, an assistant chancellor, etc.	Fig. 2 (2)
10	The school's manager allocates the available resources within the approved goals and associated guidelines promulgated by the institution's entrepreneurial decision-maker such as the president, chancellor, superintendent, provost, etc.	Fig. 2 (1)

Master-Level Curricular Programs (Chairmen)	Lectures, Seminars, Practice-Oriented Projects, and other Credit-Hour Courses Supplied by Discipline — Oriented Departments' Chairmen			
	A Department (G. B. Back)	B Department (J. K. Brown)	C Department (L. M. Jones)	D Department (N. O. Smith)
Z Programs (A. B. White)	A 3221 A 3222 A 3223	B 3011 B 3012 B 3013 B 4227	C 3334 C 3335 C 3441	D 3411
Y Programs (C. D. Green)	A 3221 A 3222 A 3223		C 4081	
X Programs (E. F. Gray)	A 3221 A 3222 A 3223	B 4611		D 3611

Fig. 1. This skeletal program-course matrix implies that master-level curricular programs are prepared by curricular chairmen for student investment in courses supplied by disciplined-oriented departments under the cognizance of the traditional departmental chairmen. It is pertinent to note that the matrix elements are courses.

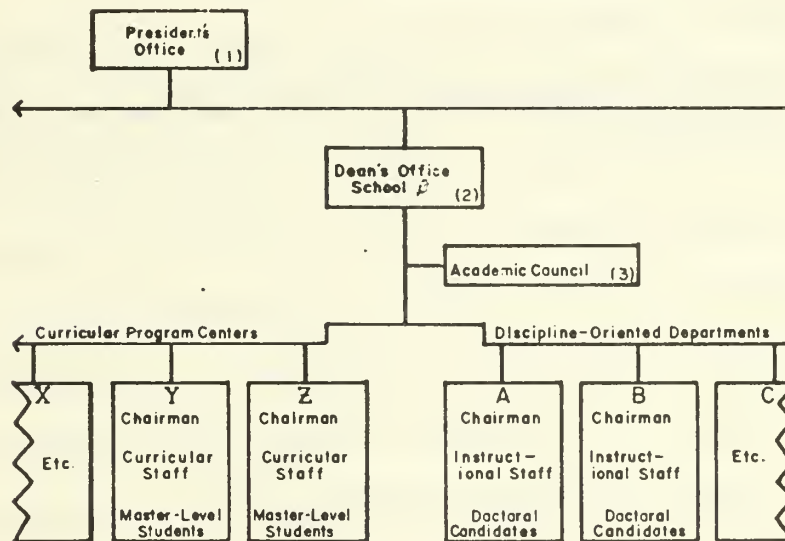


Fig. 2. This chart shows the redistribution of the responsibilities for the master-level curricular programs without disturbing the traditional distribution of responsibilities for the doctoral programs.

requirements, as one possible measure of this freedom of choice by the learner or his counselor. An example near one extreme, Δ equal to zero, is that which Kerr³ described as having evolved from the German Lernfreiheit-Lehrfreiheit system and Elliot's elective system.

"Freedom for the student to choose became freedom for the professor to invent. The professor's love for specialization became the student's hate of fragmentation. The student must consume--usually at the rate of fifteen hours a week."

An example near the other extreme, Δ equal to the entire curriculum, is Zwicker's⁴ description of a free university. Of course, neither extreme is mutually acceptable, which demonstrates the reasonableness of a free curricular enterprise within bounds.

This mode of curricular operation is not to be considered the equivalent of the usual mode associated with advisees, advisors, and electives. The mode implied by Figs. 1, 2, and 3 yields master-level curricular programs oriented by vested interests in students and their programs instead of vested interests in discipline-oriented departments⁵ and their courses. This kind of orientation is assured by having those who are responsible for the design of master-level programs for the individual students (curricular chairmen) report to the dean, as implied by Fig. 2, instead of reporting to the discipline-oriented departmental chairmen.

³Clark Kerr, The Uses of the University (Cambridge: Harvard University Press, 1964) p. 14.

⁴Barie Zwicker, "Rochdale: "The Ultimate Freedom," Change, I (November-December, 1969), p. 37.

⁵Paul L. Dressel, F. Craig Johnson, and Philip M. Marcus, The Confidence Crisis (San Francisco: Jossey-Bass Inc., Publishers, 1970), p. 167.

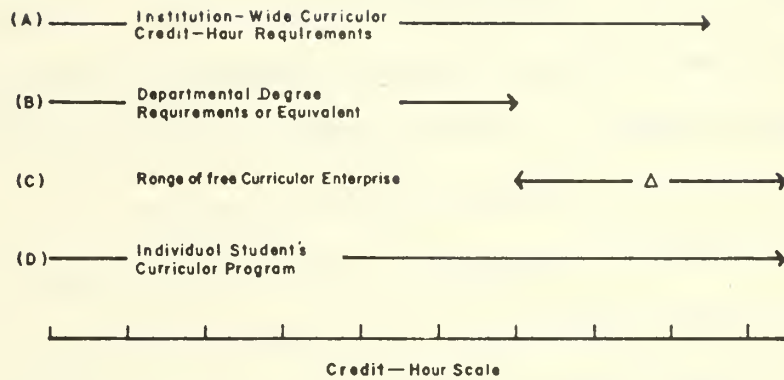


Fig. 3. The courses included in Δ for a master-level student by his curricular chairman, who is attached to School β , may be chosen from course offerings in Schools α , γ , ϵ , etc.

It is pertinent to note that a free curricular enterprise within bounds to provide master-level programs may be operated without disturbing the existing mode of operation which provides the doctoral programs. (See Fig. 2.) The actual meshing with the baccalaureate and doctoral programs would be associated with local determinations of the intervals when students are affiliated with a curricular program center. For example, if an institution decided to provide a maximum of student-oriented career counseling and early formation of natural student-peer groups, it would be reasonable to assign each undergraduate student to a curricular program center upon acceptance as a candidate for a graduate curricular program. (This could be as early as initial enrollment.) Furthermore, it would be reasonable to have this student remain under the cognizance of that center until disenrollment from the center, graduation from a program below that of a doctoral program, or completion of the qualifying requirements for a doctoral program.

Of course, the healthy coexistence of baccalaureate and doctoral programs with master-level programs resulting from a free curricular enterprise within bounds would be provided by the aforementioned regulation by higher authority. Much of this regulation would be associated with the allocation of resources as implied by items 9 and 10 of Table I, and would be characteristic of each institution. Examples of such regulation might be associated with minimum class size, faculty and support personnel recruiting, etc.

Some sample distributions of faculty responsibilities which may be considered approximations to this model exist in the engineering segments of Rensselaer Polytechnic Institute, Southern Methodist University, University of California at Los Angeles, and the University of Alabama. These are considered approximations because their curricular operations are described⁶ by matrices in which the elements are faculty members. This implies the awkwardness of a faculty member having "to serve two masters" which can be avoided by operating according to a matrix in which the elements are courses as shown in Fig. 1.

⁶Thomas L. Martin, Jr., "Administrative Organization," *Britannic Review of Developments in Engineering Education* (Chicago: Encyclopedia Britannica, Inc., Publishers, 1970), p. 17.

SAMPLES OF ACTUAL OPERATIONS WHICH HAVE EVOLVED
FROM DISTRIBUTIONS APPROXIMATING THE MODEL

The most unique features of the model are the curricular program centers and the curricular specialist positions. (See items 3 and 5 of Table I.) The first noteworthy observation associated with the establishment of curricular program centers is the evolution of a unique communication subsystem as sketched in Fig. 4. The curricular chairmen learn early in their tenure of office that they must organize and maintain communications, not only with particular discipline-oriented departments, but also with local user-groups, if they are to effectively discharge responsibilities similar to those in Table I. (An example of a local user-group is described in the following paragraph.) They must formalize their relations with local user-groups and develop a unique translation function. When a curricular chairman and his staff visit with the personnel in a users' requirements center to help them improve their capability of identifying and forecasting their educational needs, they acquire fragmentary information concerning societal needs, in a language which, in general, would alienate university faculty members. To be made useful, this fragmentary information requires a translation into the language of course-content, potential research projects, and potential practice-oriented projects. For example, a curricular specialist who was designing a new master-level curricular program in Ocean Engineering visited the head of a maritime operation concerned with underwater platforms, towers, lockers, salvage, reclamation, etc. His frequent response to curricular questions, "All you need to teach them is that you can't push on a rope," would have led to an early termination

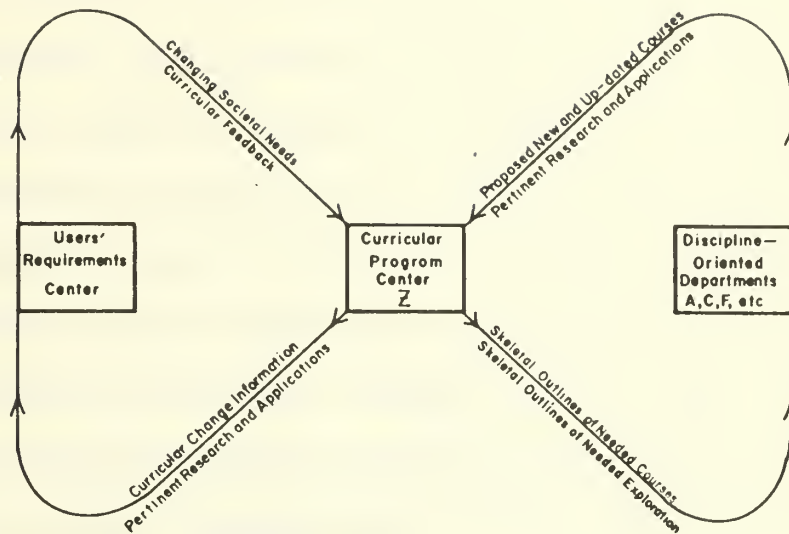


Fig. 4. An information flow diagram. Usually, the curricular programs center must translate the curricular feedback and societal-need information from a language which would alienate faculty members into the language of course content, research, or practice-oriented projects.

of the visit by most faculty members. Instead, this curricular specialist obtained fragmentary information which he could translate into the content of new courses and a practice-oriented engineering project with a potential sponsor. Upon return from such visits, the personnel in the curricular program center translate such fragmentary information and correlate it with information concerning student aspirations and needs accumulated while performing their counseling function. After consideration of the user's current and future needs, and the student's aspirations and needs, the information is assembled into skeletal outlines of needed course changes, new courses, and experimental or theoretical exploration including potential project sponsors. Subsequently, the curricular chairman or the cognizant curricular staff member presents these skeletal outlines of needs to the several departmental chairmen and their faculty members who have matching interests and capabilities. (See Fig. 4.) The responses of these several departments may include proposals of new courses, updated courses, course-sequencing changes, course-prerequisite changes, relevant research results and applications, feasible projects for consideration by the potential project sponsors, etc. After the curricular chairman has considered all such proposals by the several departments and has made the final decision on the curricular alterations within his bounds, he translates and transmits curricular-change information and research information to the users' requirements center. Regardless of the nature of this transmitted information, the personnel in the users' requirements center are gratified, and respond by volunteering curricular feedback and organized information concerning their changing needs. This feedback and information are

so valued by the curricular chairman that he initiates a repetition of the cyclical events shown in Fig. 4. It is pertinent to note that this unique function of translating changing societal needs into a language which excites faculty members fills a void⁷ described by Gardner.

The formalization of relations with the users of the institution's output, as implied by Fig. 4, is an extension of an idea used by the American Association of Engineering Education as it schedules the "Relations with Industry" meetings at the level of their local sections. This practice might be profitably emulated by other faculty groups and their professional societies, but only as a first approximation to the formalization needed to provide curricular chairmen with curricular feedback and information concerning changing societal needs. The next approximation would include organizing such user-groups into one-year ad hoc committees to collect information such as the professional contribution and attitudes of recent graduates from their employers, their coworkers, and the graduates themselves. It is from such information that a curricular chairman⁸ can fashion and implement timely curricular adjustments.

The second noteworthy observation associated with the establishment of curricular program centers is the time required to implement major curricular changes. Establishment or disestablishment of a curriculum is considered a major change, and all lesser changes are considered minor changes. The two following cases are actual examples

⁷ John W. Gardner, "The University and the Cities," Educational Record, L (Winter, 1969) p. 6.

⁸ The formalization of the relations between the curricular chairman and the user-groups provides for more responsiveness to changing societal needs than any existing relations between faculty members and user-groups because of a difference in the vested interests.

of how two major curricular changes occurred in master-level programs in one segment of one institution. This institution has implemented a curricular operation not radically different from that implied by the distribution of responsibilities in Table I.

Case I. Early in March of a recent year, a professor in a discipline-oriented department became concerned about the inadequate course coverage of his area of specialization in several existing curricula. His concern was a consequence of the significances of recent research results. By the end of that March, he had convinced the pertinent curricular chairman of his concern. By the following August, this curricular chairman and his staff, as the result of recommendations from a local ad hoc committee and the pertinent users' requirements center, had designed a new curriculum instead of altering any of the existing curricula; had obtained an endorsement from a department chairman stating that the curriculum satisfied his departmental degree requirements, had obtained a statement from the school's academic council stating that the curriculum satisfied all curricular and degree requirements, and that successful completion would merit a specified master's degree; had obtained the dean's approval to implement the new curricular program, which implied that the resources would be allocated so as to provide support for one pilot-group of students; and had implemented the new curricular program with a pilot-group of twenty volunteer students who had monitored the progress of this change from its beginning. Thus, within a period of approximately six months, a new master-level

curricular program which called for courses from six different departments was conceived, designed, approved, and implemented.

Case II. By mid-November of a recent year, a users' requirements center convinced "their" curricular chairman that the technical education of the graduates of a particular program under his cognizance was obsolete upon completion because of recent advances in the associated technologies. By the end of the following March, this curricular chairman had obtained concurrence of the degree-granting department and the users' requirements center that the graduates of several other curricular programs were better suited to the user's needs, and that the curriculum in question should be terminated. By the time of the following June graduation, the curricular chairman had obtained the dean's approval to disestablish the curriculum, which implied that he was prepared to adapt to any resulting changes in the allocation of resources. Accordingly, the curriculum was disestablished after the June graduation. Disestablishment included terminating the student input to the program, and implementing, for the remaining students, transition programs compatible with their individual choices.

Thus, within a period of approximately seven months, a master-level curricular program was disestablished. These two cases demonstrate that the time required to implement major master-level curricular changes is of the order of several months. Also, the nature of the two cases demonstrates the timeliness of the curricular changes.

The third noteworthy observation associated with the implementation of curricular program centers is the rapid development of respect for the curricular chairmen and their curricular staffs, which may be interpreted as evidence of a natural or mutually acceptable division of the faculty labor associated with master-level programs. Of course, the incumbents of these positions must be selected with utmost care. A curricular chairman should possess the kind of creativity which would be respected by the students enrolled in the curricula under his cognizance, should derive satisfaction from identifying ways in which creativity is expressed and established within the range of his curricular programs, should derive satisfaction from training his curricular staff to effectively alter curricular programs to match individual student levels of creativity and intelligence, should derive satisfaction from playing the role of a project catalyst, and should derive satisfaction from designing the necessary extracurricular programs to help each individual student make the utmost of the one life he has to live. The curricular staff should derive satisfaction from the kinds of curricular tasks which provide satisfaction for the curricular chairman. Experience in several institutions indicates that the curricular staff has been composed of regular faculty members who had joint appointments corresponding to the expenditure of part-time effort in a curricular program center and the remainder in a discipline-oriented department. However, such appointments could provide for effective utilization of adjunct professors, highly selected visiting professors, and talented professionals who live in the local surroundings of the institution. In this manner, the curricular

chairman could also obtain the expertise to design and implement meaningful and effective extracurricular programs. Another attractive possibility is the part-time appointment of a doctoral candidate who is attached to one of the discipline-oriented departments, is preparing for a collegiate teaching career, and is interested in the practice of transmitting knowledge rather than in its discovery. An appointment of such a doctoral candidate as a curricular staff member would provide him with excellent practice-oriented experiences. Accordingly, those foundations which support programs for improving collegiate teaching might derive more from their support of a chair or fellowship in a curricular program center than elsewhere.

BENEFITS IN ADDITION TO PROVIDING FOR TIMELY
CURRICULAR CHANGES

Eight years of experience with a free curricular enterprise within bounds similar to the one implied by Table I have revealed additional benefits for the students, faculty, and administration of the institution.

Of benefit to all, are two non-threatening influences which provide for more effective teaching. The first such influence is the result of the uncle-like role which the curricular chairman plays relative to the faculty members who teach the courses included in the curricular programs under his cognizance. Experience has revealed that most curricular difficulties may be the result of one or more of four causes: (1) faulty sequencing of courses, (2) inadequate or inappropriate course content, (3) initial misplacement of students in a curriculum, or (4) ineffective teaching. In his attempt for early identification and remedy of difficulties associated with (1), (2), and (3), the curricular chairman talks with the concerned faculty member. Of course, this dialogue excludes effectiveness of teaching and should identify the cause as (1), (2), or (3). However, if the difficulty actually is associated with ineffective teaching, this dialogue indirectly alerts the faculty member to this difficulty. Receipt of such information in this manner does not infringe upon the faculty member's academic freedom and permits him to initiate a timely adjustment of his own design. Furthermore, the curricular chairman does not confer with the faculty member's "boss" concerning such curricular difficulties, and he himself is not in the official line of responsibility which determines the faculty member's pay

increments and promotions. Accordingly, the first try for early identification and remedy of difficulties in all four categories is non-threatening. Only on rare occasions has the first try not been successful.

It is pertinent to note that those institutions which have established curricular chairman positions and have assigned to them the additional responsibility of submitting recommendations concerning pay increments and promotions for those faculty members who teach the courses in the curricula under their cognizance have precluded this non-threatening influence for more effective teaching. This influence is of particular value in the case of the novice faculty member.

The second influence which provides for more effective teaching is the quasi competition which develops as the result of establishing a free curricular enterprise within bounds. The two following cases are actual examples of how this quasi competition has improved the teaching effectiveness in a non-threatening manner in two different institutions. Both institutions have in being a curricular operation not radically different from that implied by the distribution of responsibilities in Table I.

Case III. The chairman of discipline-oriented Department A, as a result of continuing excessive complaints concerning a graduate course, followed the recommendations of his sub-field committee and shifted the teaching assignment from Professor QT to Professor IQ. At the end of the first term of Professor IQ's teaching of this course, this departmental chairman complained to the dean. He stated that his

department had "lost" the course and would probably lose recruiting permission equivalent to one assistant professor because the curricular chairman had decided to substitute a similar course offered by Department B. He felt that the decision was unfair after Professor IQ had taught the course in an outstanding manner. The dean countered with the statement that the situation would have been precluded if more effective teaching had been provided for that course a year or two sooner. In view of the fact that the course was not included in the modules composing the departmental degree requirements, the only consolation the dean could give Departmental Chairman A was, "Wait until Department B falters with this course and be prepared to have something better to offer."

Case IV. A chairman of a curricular program center made the following statements. "The new organization permits me a supermarket approach. Contrary to the old system in which I had to find courses for a man to teach, I can now concentrate on planning the student programs and shopping for the right man to teach this or that. This system places greater responsibility on the man to make his teaching significant."

Accordingly, both cases demonstrate that the quasi competition is a non-threatening influence which provides for more effective teaching.

That is, more effective teaching is provided without a faculty member being told to do a better job by one who plays a dominant role in the determination of his pay increments and promotions.

In addition to providing for timely curricular changes and more effective teaching, a free curricular enterprise within bounds provides the individual student additional benefits in the form of improved⁹ counseling by curricular experts in the following respects: (1) help in selecting a curricular program based upon knowledge of the student's expectations and aspirations, and the knowledge of the curricular and extracurricular experiences of other students who made a similar selection; (2) uncle-like responses to curricular and extracurricular difficulties, complaints, and suggestions by his key curriculum decision-maker; and (3) career counseling including job selection and placement.

For the individual faculty member, a free curricular enterprise within bounds provides the following additional benefits: (1) an effective procedure for influencing timely curricular changes which is equally available to all faculty members--selling one's ideas to a curricular chairman; (2) increased opportunity for inexperienced faculty members to develop and teach a new course--selling one's new course to a curricular chairman; (3) effective, non-threatening, uncle-like help from the curricular program center when difficulties are encountered in teaching a single student or a particular group of students; (4) assistance in keeping abreast of the application of new knowledge within his area of specialization; (5) establishment of a third kind of faculty expert, the curricular expert, on a par with the teaching expert and the research expert; and (6) a more

⁹ This counseling is in addition to that which normally occurs during student-professor interaction. 21

effective distribution of the academic tasks associated with master-level programs, which reduces inefficient spreading of the individual faculty member's efforts. The significance of the sixth additional benefit may be more obvious if one considers what is usually expected from each individual faculty member; namely, remaining current with the literature in his field of specialization, generating a research program which yields publications, spending two to three hours preparing for each class meeting, participating in curriculum review and innovation, counseling a fair share of the students, supervising a fair share of the theses, and providing service to the community! It is unreasonable to expect each faculty member to participate and excel in all of these demanding tasks.

For the departmental chairman, a free curricular enterprise within bounds for master-level programs provides the following additional benefits: (1) release from the curricular and counseling tasks associated with the master-level programs; (2) more time for support of the research and other scholarly activities which enhance his departmental doctoral programs; (3) more time for counseling students in the doctoral programs; and (4) more time to collect and prepare departmental short-range needs and long-range goals, and the necessary justification.

For the administration, a free curricular enterprise within bounds for master-level programs provides the following additional benefits: (1) establishment of curricular chairman and curricular staff positions increases the number of trainee-like positions for those faculty members who aspire to academic administrative positions; (2) multidisciplinary master-level programs as the usual instead of

the exceptional programs; (3) decentralization, with unambiguous accountability, of the decision-making associated with curricular and instructional matters; (4) establishment of more formal communications between the curricular program centers and the users' requirements centers also develops sources of long-range societal needs which are considered along with on-campus long-range goals during the preparation of the "approved goals of the institution;" (5) a scheme whereby the institution can respond effectively to its fair share of societal needs, via its master-level programs, without losing its intellectual freedoms; (6) a distinct separation of the short half-life processes of nucleation, growth, and decay of curricular programs from the long half-life processes of nucleation, growth, and decay of discipline-oriented departments permits more effective planning and allocation of resources; and (7) more effective budget justification.

ESTABLISHMENT OF CURRICULAR SPECIALIST POSITIONS

Experience in establishing curricular chairman and curricular staff positions to provide for timely changes in master-level programs is sparse but may be helpful to one contemplating a similar innovation. With regard to cost, it seems that such establishment need not be a change by accretion; it can be a change within existing personnel limitations. With regard to the dynamics of the change, a few comments concerning Hefferlin's three most basic factors may be helpful. As the result of his study¹⁰ of academic reform, he concluded that the three following factors were more basic than others in stimulating reform: (1) an advocate who is one of the most influential members of the institution, (2) the possibility of benefit or reward, and (3) the openness of the institution's organization structures to influences of change.

Relative to Hefferlin's factor (1), the sparse experience to date implies that the dean of a school, or his equivalent, is more effective as the chief advocate than the president or his equivalent. Of course, the president needs to be an advocate of this type of innovation, but it seems best to have the dean develop the image of the "chief" advocate. During the preliminary phase, a dean's own enthusiasm for redistributing faculty responsibilities to provide all with additional benefits has greater potential for respect and acceptance among his faculty than if the dean relayed the president's enthusiasm. During the implementing phase, an enthusiastic dean, with the help of his

¹⁰ JB Lon Hefferlin, Dynamics of Academic Reform (San Francisco: Jossey-Bass Inc., Publishers, 1969), p. 140

ad hoc committees, can compose the implementing documents in a more effective language and in a more timely manner than the president and his staff.

Relative to Hefferlin's factor (2), the chief advocate could make his enthusiasm more contagious by constructing a complete program-course matrix appropriate to his school. One or more of the skeletalized matrices in Figs. 5, 6, 7 or 8 may "trigger" an idea for an appropriate matrix. An empirical fact which must be considered when designing program-course matrices is that the effectiveness of the free curricular enterprise within bounds diminishes as the number of departments supplying courses for a curricular program approaches one. The criterion used to delineate the discipline-oriented departments in these matrices is that the areas of knowledge should approximate the areas of specialization of the school's doctoral programs. This tends to group faculty members with slightly overlapping areas of interest and competence, and tends to decrease the wasteful duplication in the curricular programs. The criterion used to delineate the master-level curricular programs in such matrices is that they should be more pragmatic than the doctoral programs. Presumably, the students will enter the nation's work force immediately after graduation from these curricular programs and will be expected to make significant contributions to urgent or meaningful societal problems.¹¹ The combined use of an appropriate matrix and a table of possible benefits for each institutional group, similar to those described in a previous portion of this essay, could be very convincing

¹¹Gustave O. Arlt, "The Future of Graduate Education, "Proceedings of the Second Summer Workshop for Graduate Deans (Washington: The Council of Graduate Schools, 1969), pp. 135-140.

Master-Level Curricular Programs (Chairman)	Lectures, Seminars, Practice—Oriented Projects, and Other Credit-Hour Courses Supplied by Discipline—Oriented Departments (Chairmen)				
	Educational Systems Department (G.H. Smith)	Public School Administration Department (J.K. Dokes)	Public School Curriculo Department (L.M. Brown)	Educational Methodology Department (N.O. Jones)	Etc.
Primary School Teaching (A.B. White)	⊕	⊕	⊕	⊕	
Middle School Teaching (C.D. Green)	⊕	⊕	⊕	⊕	
Junior High School Teaching (E.F. Gray)	⊕	⊕	⊕	⊕	
Etc					

Fig. 5. A possible program-course matrix for master-level curricular programs in a School of Education. To prepare for an effective flow of information corresponding to Fig. 4, A. B. White might organize the primary teachers by experience groups, school principals by grade levels, program sponsors of gifted and disadvantaged children, and other pertinent groups in the local county to play the roles in the users' requirements center. The matrix elements, \oplus , are courses as in Fig. 1.

Master-Level Curricular Programs (Chairman)	Lectures, Seminars, Practice—Oriented Projects, and Other Credit—Hour Courses Supplied by Discipline—Oriented Departments (Chairmen)				Etc.
	Mechanics Department (J.K. Smith)	Electronics Department (L.M. Dokes)	Structures and Devices Department (N.O. Brown)	Engineering Systems Department (A.B. Jones)	
Ocean Engineering (C.D. White)	⊕	⊕	⊕	⊕	
Environmental Engineering (E.F. Green)	⊕	⊕	⊕	⊕	
Urban Engineering (G.H. Gray)	⊕	⊕	⊕	⊕	
Etc.					

Fig. 6. A possible program-course matrix for master-level curricular programs in a School of Engineering. Presumably, C. D. White could develop multidisciplinary options for his students in the Ocean Engineering Program which could lead to a designated master's degree associated with either the Departments of Oceanography or Physics in the School of Natural Sciences, a designated master's degree associated with the Mechanics Department in the Engineering School, or a Master of Engineering degree associated with the Engineering School. Note that the matrix elements, \oplus , are courses in contrast to faculty members in the grid patterns reported by Martin.⁶

Master-Level Curricular Programs (Chairmen)	Lectures, Seminars, Practice—Oriented Projects, and Other Credit—Hour Courses Supplied by Discipline—Oriented Departments (Chairmen)				
	Organization Structures Department (L.M.Smith)	Accounting and Finance Department (N.O.Dokes)	Marketing Department (A.B.Brown)	Operations Analysis Department (C.D.Janes)	Etc.
Industrial Management (E.F.White)	○	○	○	○	
Governmental Management (G.H.Green)	○	○		○	
Non-Profit Institution Management (J.K.Groy)	○	○		○	
Etc.					

Fig. 7. A possible program-course matrix for master-level curricular programs in a School of Business Administration. The number of curricular options and the number of ways of organizing the users' requirements centers of Fig. 4 which might occur to resourceful curricular chairmen in this school are probably greater than in any other school. A mutual reward for obtaining genuine curricular feedback and societal-need information might be a reduced length of the usual employer-operated training periods for new MBA's.

Master-Level Curricular Programs (Chairmen)	Lectures, Seminars, Practice—Oriented Projects, and Other Credit—Hour Courses Supplied by Discipline—Oriented Departments (Chairmen)				
	Anthropology Department (N.O.Smith)	Psychology Department (A.B.Dokes)	Sociology Department (C.D.Brown)	Economics Department (E.F.Jones)	Etc.
Junior College Teaching (G.H.White)	○	○	○	○	
Social Welfare (J.K.Green)	○	○	○	○	
Urban Engineering (L.M.Gray)	○	○	○	○	
Etc.					

Fig. 8. A possible program-course matrix for master-level curricular programs in a School of Social Sciences. If L. M. Gray interpreted Urban Engineering to mean the application of the principles of the social sciences for the benefit of urban mankind, he might design a multidisciplinary curricular option called "Dynamics of Population Distributions". Also, he might enlist the local urban coalition group to play the roles in the users' requirements center as shown in Fig. 4. With a little initial success and much enthusiasm, he could expect The League of American Cities to support the associated student research and practice-oriented projects.

to the school's faculty that the chief advocate is not playing a zero-sum game as described by Hodgkinson¹², and could elicit mutual concurrence to establish curricular specialist positions with responsibilities similar to those recorded in Table I.

Relative to Hefferlin's factor (3), the chief advocate will need to appraise the existing openness of his institution to influences of change, and design his strategy and tactics accordingly. However, if the advocate is successful in establishing the described curricular chairman positions, he will have improved his institution's openness to influences of change without jeopardizing his institution's intellectual freedoms. That is, the advocate's success may provide for that "continuous change, continuous self renewal, and continuous responsiveness" which Gardner¹³ has so eloquently alluded to on more than one occasion.

¹² Harold L. Hodgkinson, "Governance and Factions - Who Decides Who Decides," The Research Reporter (Berkeley: Center for Research and Development in Higher Education, 1969). p. 5.

¹³ John W. Gardner, "Uncritical Lovers, Unloving Critics," in Commencement Address (Ithaca: Cornell University, 1968), p.7.

SUMMARY

The distribution of faculty responsibilities herein described provides for a free curricular enterprise within bounds, which in turn provides for timely curricular changes, which in turn can provide curricular programs more responsive to student needs and more closely synchronized with changing societal needs. Curricular operations and additional benefits are demonstrated by samples from actual master-level operations where most of the experience has accumulated to date. Furthermore, contemplation of the urgent societal needs and the capabilities of the people required to define the problems, create the plausible solutions, and organize to implement the most effective solutions may lead to the conclusion that large numbers of graduates from such master-level programs are needed now and during the foreseeable future. If this conclusion is reasonably valid, early implementation at the master's level is urgent and is feasible because it will yield: (1) additional benefits for all concerned; (2) a redistribution of responsibilities which need not disturb the traditional baccalaureate and doctoral programs; and (3) a scheme whereby an institution can respond to its fair share of societal needs without jeopardizing its intellectual freedoms. The urgency of implementation at the baccalaureate and doctoral levels is considered more nearly determined by individual institutional conditions.

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<p>A free curricular enterprise within bounds which provides for timely curricular changes is described as a mode of operation between the two extremes of the curricular spectrum; namely, the completely free curricular operation and the absolute monopolistic curricular operation. The demand for courses is generated by the preparation of curricular programs under the cognizance of curricular chairmen. Students invest in courses supplied by discipline-oriented departments under the cognizance of the traditional departmental chairmen. The quasi competition within bounds provides a range of free curricular enterprise beyond the minimum Master degree requirements in School β for an interlocking curricula superstructure containing pertinent concepts in disciplines of other schools sufficiently meaningful to attract and educate those needed to define and solve the urgent problems of contemporary society. In this manner an institution can respond to its fair share of societal needs via its Master degree programs without jeopardizing its intellectual freedoms. More effective teaching by way of two inherent non-threatening procedures is but one of seventeen additional benefits described.</p>			

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